

POLYHYDROXYALKANOATE PRODUCTION BY COENZYME A-DEPENDENT ALDEHYDE DEHYDROGENASE PATHWAYS

Abstract Of The Invention

Organisms are provided containing genes encoding one or more enzymes, Coenzyme-A-dependent aldehyde dehydrogenase, acyl-CoA transferase, acyl-CoA synthetase, β -ketothiolase, acetoacetyl-CoA reductase and/or PHA synthase. In some cases one or more of these genes are native to the host organism and the remainder are heterologous genes provided by genetic engineering. These organisms produce poly (3-hydroxyalkanoate) homopolymers or co-polymers comprising 3-hydroxyalkanoate monomers other than 3-hydroxybutyrate wherein these 3-hydroxyalkanoate units are derived from the enzyme-catalyzed conversion of alcohols to 3-hydroxyacyl-CoA monomers, where at least one step in the conversion pathway involves a Co-enzyme A-dependent aldehyde dehydrogenase activity. The PHA polymers are readily recovered and industrially useful as polymers for articles such as films, latexes, coatings, adhesives, fibers, binders, resins, and medical devices.